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| 10/584,096 | 06/22/2006 | Rodolfo Verzegnassi | FR030158 US | 1407 |
| 25235 7590 11/27/2009 HOGAN & HARTSON LLP ONE TABOR CENTER, SUITE 1500 1200 SEVENTEENTH ST DENVER, CO 80202 | | | EXAMINER HSIEH, PING Y | |
| | | | ART UNIT 2618 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/584,096 | Applicant(s) VERZEGNASSI ET AL. | |
| | Examiner PING Y. HSIEH | Art Unit 2618 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/4/09 has been entered.

Drawings

1. The drawings are objected to because the unlabeled rectangular box(es) shown in the drawings should be provided with descriptive text labels. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top

margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitton (U.S. PG-PUB NO. 2004/0028121) in view of Karjalainen (U.S. PATENT NO. 7,313,114).

-Regarding claims 1 and 4, Fitton discloses a data receiver for receiving user data and reference data coming from a transmitter via at least a channel **(as disclosed in fig. 9 and further disclosed in paragraph 124)**, the data receiver comprising means for despreading unscrambled data **(despreaders 930, fig. 9 and further disclosed in paragraph 129)**; means for analyzing a characteristic of the channel **(code tracking 920 and channel estimator 922 as disclosed in fig. 9 and paragraph 126-127)**; a plurality of rake fingers of the data receiver **(rake fingers 906a, b, c as disclosed in fig. 9 and further disclosed in paragraph 126)**, each rake finger comprising means for respectively evaluating the contribution of interferences of data caused by the channel **(code tracking 920 and channel estimator 922 as disclosed in fig. 9 and paragraph 126-127)** said means for respectively evaluating the contribution of interferences including a plurality of correlators, wherein each correlator receives scrambling codes of other links that contribute to the interference **(correlators 622, 624 as disclosed in fig. 6 and further disclosed in paragraph 101)**; and subtracter means for cancelling the contribution of interference in the user data for the rake finger, using the respectively evaluated interferences in each path of the rake finger **(interference cancellation units 910 as disclosed in fig. 9 and further disclosed in paragraph 125; although Fitton does not specifically disclose the interference cancellation units 910 are included in the rake fingers, It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the interference cancellation units to be**

integrated in the rake fingers, since it has been held that rearranging parts of an invention involved only routine skill in the art. *In re Japikse*, 86 USPQ 70 (CCPA 1950)), said subtracter means being placed before said unscrambling means (interference cancellation units 910 provides outputs 912 to despreaders 930 as shown in fig. 9 and further disclosed in paragraph 125). However, Fitton fails to specifically disclose means for unscrambling data.

Karjalainen discloses means for unscrambling data (i.e. deinterleaver 426, fig. 4 and further disclosed in col. 10 lines 1-20).

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the receiver of Fitton to include a deinterleaver as disclosed by Karjalainen. One is motivated as such in order to arrange data in a way to increase performance.

-Regarding claim 2, the combination further discloses the data are in compliance with the UMTS standard (Fitton, as disclosed in paragraph 3).

-Regarding claim 3, the combination further discloses the reference data are provided by the CPICH channel (Fitton, as disclosed in fig. 5).

-Regarding claim 5, the combination further discloses the steps of including adding a determined evaluation of each path in each of the plurality of rake fingers together to determine interference in the rake finger (Fitton, the respective outputs from the cross-correlators 622 and 624 are then multiplied by channel estimates 606c and 606b in multipliers 626 and 628 respectively and the results combined to form the final term of Equation 5

on line 630 as disclosed in fig. 6 and paragraph 101), wherein subtracting the evaluation of interference includes subtracting the determined interference in each of the plurality of rake fingers from user data processed via the rake finger and providing an output representing interference-corrected user data for unscrambling (**Fitton, interference cancellation unit 910 as disclosed in fig. 9 and further disclosed in paragraph 125-142**), and wherein unscrambling includes unscrambling the interference-corrected user data output (**Fitton, output 914 as disclosed in fig. 9 and further disclosed in paragraph 125-142**).

-Regarding claim 6, the combination further discloses subtracting includes subtracting an interference evaluation within each of the plurality of rake fingers (**Fitton, shown in fig. 9**).

-Regarding claim 7, the combination further discloses wherein respectively determining an evaluation of the interferences includes separately determining an interference evaluation for each of a plurality of paths within each of the plurality of rake fingers, further comprising the steps of adding the separately-determined interference evaluations (**Fitton, the respective outputs from the cross-correlators 622 and 624 are then multiplied by channel estimates 606c and 606b in multipliers 626 and 628 respectively and the results combined to form the final term of Equation 5 on line 630 as disclosed in fig. 6 and paragraph 101**), and wherein subtracting includes subtracting the added interference evaluations from the received user data (**Fitton, interference**

cancellation unit 910 as disclosed in fig. 9 and further disclosed in paragraph 125-142).

-Regarding claim 8, the combination further discloses the means for respectively evaluating the contribution of interferences includes an interference estimator for each path in the rake finger, each interference estimator including a plurality of correlators and a correlator adder to add the output of each correlator, and an interference adder to add the output of the interference estimator for each path **(Fitton, the respective outputs from the cross-correlators 622 and 624 are then multiplied by channel estimates 606c and 606b in multipliers 626 and 628 respectively and the results combined to form the final term of Equation 5 on line 630 as disclosed in fig. 6 and paragraph 101)**; and the subtracter means is located in the rake finger, coupled to receive an output from the interference adder, adapted to subtract the output of the interference adder from the user data to provide a subtracted user data output **(Fitton, as shown in fig. 6)**, and coupled to provide the subtracted user data output to the means for unscrambling data **(Fitton, as shown in fig. 10)**.

-Regarding claim 10, the combination further discloses the means for respectively evaluating comprises a plurality of interference estimators respectively allocated to a path in the plurality of rake fingers, and an adder to add an output of the interference estimators **(the respective outputs from the cross-correlators 622 and 624 are then multiplied by channel estimates 606c and 606b in multipliers 626 and 628 respectively and the results**

combined to form the final term of Equation 5 on line 630 as disclosed in fig. 6 and paragraph 101), and the subtracter means is located after the adder and adapted to receive and use an output from the adder to subtract interference from user data processed via the rake finger (as shown in fig. 6).

-Regarding claim 11, Fitton discloses a rake receiver for processing a received data signal **(as disclosed in fig. 9 and further disclosed in paragraph 124)**, the rake receiver comprising a plurality of rake fingers **(rake fingers 906a, b, c as disclosed in fig. 9 and further disclosed in paragraph 126)**, each of rake fingers comprising, an interference estimator to determine the interference in the path **(code tracking 920 and channel estimator 922 as disclosed in fig. 9 and paragraph 126-127)** wherein each interference estimator includes a plurality of correlators, each correlator receiving scrambling codes of other links that contribute to the interference **(correlators 622, 624 as disclosed in fig. 6 and further disclosed in paragraph 101)**, an adder to add the determined path interferences from the interference estimators **(the respective outputs from the cross-correlators 622 and 624 are then multiplied by channel estimates 606c and 606b in multipliers 626 and 628 respectively and the results combined to form the final term of Equation 5 on line 630 as disclosed in fig. 6 and paragraph 101; although Fitton does not specifically disclose the adder is included in the rake fingers, It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the adder to be integrated in the rake**

fingers, since it has been held that rearranging parts of an invention involved only routine skill in the art. *In re Japikse*, 86 USPQ 70 (CCPA 1950)), a subtracter to subtract the added interferences from the received data signal to provide a corrected output corresponding to the received data signal with the interferences subtracted therefrom (**interference cancellation units 910 as disclosed in fig. 9 and further disclosed in paragraph 125; although Fitton does not specifically disclose the interference cancellation units 910 are included in the rake fingers, It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the interference cancellation units to be integrated in the rake fingers, since it has been held that rearranging parts of an invention involved only routine skill in the art. *In re Japikse*, 86 USPQ 70 (CCPA 1950))**); a despreader to receive and despread the unscrambled output to provide a despread output (**despreaders 930, fig. 9 and further disclosed in paragraph 129**); and a combiner to combine the despread output with outputs from others of the plurality of rake fingers (**rake combiner 916, fig. 9**). However, Fitton fails to specifically disclose an unscrambler to receive and unscramble the corrected output to provide an unscrambled output.

Karjalainen discloses an unscrambler to receive and unscramble the corrected output to provide an unscrambled output (**i.e. deinterleaver 426, fig. 4 and further disclosed in col. 10 lines 1-20**).

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the receiver of Fitton to include a deinterleaver as disclosed by Karjalainen. One is motivated as such in order to arrange data in a way to increase performance.

-Regarding claim 12, the combination further discloses each of the interference estimators includes a plurality of correlators, each correlator adapted to generate an interference estimate for all $j-1$ paths in the received data signal, where j is not equal to the path of the finger in which the correlator is located, and an adder to add the output of the plurality of correlators, and to provide the output as the determined path interference for the interference estimator **(Fitton, the respective outputs from the cross-correlators 622 and 624 are then multiplied by channel estimates 606c and 606b in multipliers 626 and 628 respectively and the results combined to form the final term of Equation 5 on line 630 as disclosed in fig. 6 and paragraph 101).**

-Regarding claim 13, the combination further discloses including a conjugate device to evaluate the conjugate of a scrambling code for the data signal, and wherein the unscramble uses the evaluated conjugate to unscramble the corrected output **(Fitton, as disclosed in fig. 9 and further disclosed in paragraph 125-143).**

Allowable Subject Matter

5. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 11/4/09 have been fully considered but they are not persuasive.

a. In pages 8 and 9 of the remarks, regarding claims 1, 4 and 11, applicant argues that neither Fitton or Karjalainen teach or suggest the use of correlators that receive scrambling codes of other links that contribute to the interference of data caused by the channel.

-The examiner respectfully disagrees. The combination indeed discloses the use of correlators **(Fitton, i.e., correlators 622, 624 as disclosed in fig. 6 and further disclosed in paragraph 101).**

b. In pages 9-16 of the remarks, applicant further argues how the interference cancellation occurs after the unscrambling process would affect the operation and fig. 9 of Fitton shows that cancellation is performed after the resreading 924.

-The examiner respectfully disagrees. Fig. 9 of Fitton clearly shows cancellation is performed before the unscramble means (i.e., desreading 930).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PING Y. HSIEH whose telephone number is (571)270-3011. The examiner can normally be reached on Monday~Thursday 8am ~ 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. Y. H./
Examiner, Art Unit 2618

/Lana N. Le/
Primary Examiner, Art Unit 2614